

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF THE CLAIMS:

1. (Currently amended) A nonvolatile memory apparatus comprising a nonvolatile memory and a controller,
wherein said nonvolatile memory has a first buffer memory, a second buffer memory, and a plurality of nonvolatile memory cells each capable of storing information of n bits (n: integer of 2 or larger), and can performs a first reading operation of outputting information read from said a nonvolatile memory cell as information of m bits (m: integer smaller than n) and a second reading operation of outputting information read from said nonvolatile memory cell as information of n bits,
wherein in said first reading operation, said information read from said nonvolatile memory cell is stored to said first buffer memory without storing to said second buffer memory,
wherein in said second reading operation, said information read from said nonvolatile memory cell is stored

to said second buffer memory, and then is stored to said first buffer memory, and

wherein said controller performs the first reading operation to read first information from said nonvolatile memory and performs the second reading operation to read second information from said nonvolatile memory.

2. (Original) The nonvolatile memory apparatus according to claim 1, wherein said first information is validity management information indicative of validity of a storage area of said second information.

3. (Currently amended) The nonvolatile memory apparatus according to claim 2, wherein when the nonvolatile memory is operated according to an instruction from the controller, said controller checks validity of a storage area of said second information based on ~~the basis of~~ the validity management information read from the nonvolatile memory by performing the first reading operation and, when it is determined that the storage area is valid, performs the second reading operation to read the second information from the nonvolatile memory.

4. (Currently amended) The nonvolatile memory apparatus according to claim 3, wherein said controller checks validity of a storage area of said second information based ~~on the basis of~~ validity management information read from the nonvolatile memory by performing the first reading operation, when it is determined that the storage area is invalid, checks validity of the storage area of said second information based ~~on the basis of~~ the validity management information read from the nonvolatile memory by performing the first reading operation on an alternative area of the storage area of said second information and, when the storage area is valid, performs the second reading operation to read the second information from the alternative area.

5. (Currently amended) The nonvolatile memory apparatus according to claim 1,

wherein said nonvolatile memory cell has a threshold voltage included in one of four or more threshold voltage distributions according to information to be stored, and

wherein at the time of storing said first information into said nonvolatile memory cell, said nonvolatile memory uses a predetermined voltage between said threshold voltage distributions as a boundary, sets, as the threshold voltage of the nonvolatile memory, any of threshold voltage

distributions of voltages higher than said predetermined voltage or threshold voltage distributions of voltages lower than said predetermined voltage, and compares said predetermined voltage with the threshold voltage of [[a]] said nonvolatile memory cell in said first reading operation, thereby reading m-bit information.

6. (Currently amended) The nonvolatile memory apparatus according to claim 5, wherein the threshold voltage of [[a]] said nonvolatile memory cell in which said first information is stored is a voltage selected from a voltage in an upper-limit threshold voltage distribution and a voltage in a lower-limit threshold voltage distribution.

7. (Currently amended) The nonvolatile memory apparatus according to claim 1,

wherein said controller can output second information read from the nonvolatile memory by said second reading operation to the outside, and can supply said second information input from the outside to the nonvolatile memory, and

wherein said ~~nonvolatile memory has a~~ second buffer memory ~~buffer which~~ can temporarily store second information read by said second reading operation before the second

information is supplied to said controller and can temporarily store second information supplied from said controller before said second information is stored into said nonvolatile memory cell.

8. (Currently amended) The nonvolatile memory apparatus according to claim 7, wherein said nonvolatile memory outputs first information by bypassing said second buffer memory ~~buffer~~ at the time of reading first information by said first reading operation.

9. (Original) The nonvolatile memory apparatus according to claim 8, wherein said first information includes validity management information indicative of validity of a storage area of said second information.

10. (Currently amended) The nonvolatile memory apparatus according to claim 9, wherein when the nonvolatile memory is operated according to an instruction from the controller, said controller checks validity of a storage area of said second information based on the basis of ~~based on the basis of~~ validity management information read from the nonvolatile memory by performing the first reading operation and, when it is determined that

the storage area is valid, writes the second information of said second buffer memory ~~buffer~~ into a memory cell.

11. (Currently amended) The nonvolatile memory apparatus according to claim 10, wherein said controller checks validity of a storage area of said second information based on the basis of validity management information read from the nonvolatile memory by performing the first reading operation, when it is determined that the storage area is invalid, checks validity of the storage area of said second information based on the basis of validity management information read from the nonvolatile memory by performing the first reading operation on an alternative area of the storage area of said second information and, when the storage area is valid, writes the second information in ~~the~~ said second buffer memory ~~buffer~~ into a memory cell in the alternative area.

12. (Original) The nonvolatile memory apparatus according to claim 7, wherein said controller has a controller buffer for temporarily holding second information supplied from the outside and temporarily holding second information read from the nonvolatile memory and supplied.

13. (Currently amended) The nonvolatile memory apparatus according to claim 12, wherein said controller supplies data from the controller buffer to ~~the~~ said second buffer memory ~~buffer~~, after that, stores the data in ~~the~~ said second buffer memory ~~buffer~~ to a nonvolatile memory cell and, in parallel with the storing operation, can input another data from the outside into the controller buffer.

14. (Currently amended) A nonvolatile memory apparatus comprising a nonvolatile memory and a controller,

wherein said nonvolatile memory has a first buffer memory, a second buffer memory, and a plurality of nonvolatile memory cells each of which can be set in an for storing information ~~storing state included~~ in one of four or more information storing states, and ~~can~~ performs a first reading operation of outputting information read from [said]a nonvolatile memory cell which is set in said information storing state as information of m bits (m: integer of 1 or larger) and a second reading operation of outputting information read from said nonvolatile memory cell which is set in said information storing state as information of n bits (n: integer larger than m),

wherein said first buffer memory is adapted to store information read from said nonvolatile memory cell in

performing both of said first reading operation and said second reading operation,

wherein said second buffer memory is adapted to store information read from said nonvolatile memory cell in performing said second reading operation, but not store information read from said nonvolatile memory cell in performing said first reading operation, and

wherein said controller performs the first reading operation to read first information from said nonvolatile memory and performs the second reading operation to read second information from said nonvolatile memory.

15. (Original) The nonvolatile memory apparatus according to claim 14, wherein an information storing state included in one of said four or more information storing states is a threshold voltage state included in one of four or more threshold voltage distributions of a nonvolatile memory cell.

16. (Original) The nonvolatile memory apparatus according to claim 15, wherein at the time of storing said first information into said nonvolatile memory cell, said nonvolatile memory sets, as a threshold voltage of the nonvolatile memory cell, a voltage selected from a voltage

in said threshold voltage distribution of the upper limit and a voltage in said threshold voltage distribution of the lower limit.

17. (Currently amended) The nonvolatile memory apparatus according to claim 16,

wherein said ~~nonvolatile memory has a second buffer~~ memory ~~buffer which can holds~~ second information read as n-bit information from each of a plurality of nonvolatile memory cells by said second reading operation, supplies[y] the second information to the controller, holds second information supplied from said controller, and sets one nonvolatile memory cell every n bits, at a threshold voltage included in one of four threshold voltage distributions, and

wherein the first information read as m-bit information from each of the plurality of nonvolatile memory cells by said first reading operation is output to said controller while bypassing said second buffer memory ~~buffer~~.